

REMARKS

In accordance with the foregoing, claim 17 is added. No new matter is added. Claims 1 and 3-17 are pending and under consideration.

CLAIM REJECTION UNDER 35 USC §103

Claims 1 and 3-15 are rejected under 35 USC §103(a) as being unpatentable over U.S. Patent Application Publication No. 2002/0198693 by Marusich (hereinafter "Marusich").

In the "Response to Arguments" section on pages 13-15 of the outstanding Office Action, Paragraph [0005] of Marusich is relied upon as support for the assertion that it is obvious for a person of ordinary skill in the art (POSITA) to replace a tetrahedron with a cube as a modeling element used in adaptive meshing in Marusich.

All the embodiments in Marusich use only the tetrahedron as modeling elements. Marusich emphasizes the advantages of using the tetrahedron as a modeling element in paragraph [0031]¹. As stated therein, the tetrahedron has "a minimum number of sides, edges, and nodes thus making it a more simple, more fundamental building block for subdivision of a body" and "[the] reduced number of nodes simplifies computations during deformation modeling."

Replacing the tetrahedron with a cube would increase the number of sides, edges, and nodes, thus reducing the above-cited desirable effects emphasized by Marusich relative to using the tetrahedrons. That is, Marusich teaches away from using cubes. According to MPEP 2143.01 (I), the prior art must suggest desirability of the claimed invention². However, in view of the advantages in using tetrahedrons advocated by Marusich, it is not desirable to use a cube instead of a tetrahedron because these advantageous effects would be reduced. Thus, Marusich as a whole does not suggest desirability of the subject matter of the claims.

In view of the above arguments, applicants believe that the response to the patentability arguments put forth in the prior amendment remain valid and reiterate them hereinafter.

¹ [0031] There are several advantages to embodiments of modeling elements as described above. The tetrahedron configuration of the parent element allows it to be used easily with automatic mesh generators. The tetrahedron configuration has a minimum number of sides, edges, and nodes thus making it a more simple, more fundamental building block for subdivision of a body. The reduced number of nodes simplifies computations during deformation modeling.

² The proper inquiry is "whether there is something in the prior art as a whole to suggest the *desirability*, and thus the obviousness, of making the combination," not whether there is something in the prior art as a whole to suggest that the combination is the most desirable combination available." *In re Fulton*, 391 F.3d 1195, 73 USPQ2d 1141 (Fed. Cir. 2004).

In Marusich, the tetrahedrons are not combined in orthogonal planes since the neighboring tetrahedrons do not form orthogonal planes. Moreover, the deformation described in Marusich, alters the angles between the planes defined by neighboring elements. The tetrahedrons in Marusich cannot be combined in orthogonal planes because they do not have perpendicular sides, and, moreover, are subsequently deformed in Marusich.

Independent claim 1 patentably distinguishes over the cited prior art at least by reciting "the combined cube elements are generated by combining neighboring elements in orthogonal planes, and a corrective action may be taken if necessary according to the second condition." Claims 3-10 depending directly or indirectly from claim 1 are also patentable at least by inheriting patentable features from claim 1.

Independent claim 11 is patentable at least by reciting "the combined cube elements are generated by combining neighboring elements in orthogonal planes, and a corrective action may be taken if necessary to satisfy the predetermined condition."

Independent claim 12 is patentable at least by reciting "the combined cube elements are generated by combining neighboring elements in orthogonal planes, and a corrective action may be taken if necessary to satisfy the selected predetermined condition."

Independent claim 13 is patentable at least by reciting "the combined cube elements are generated by combining neighboring elements in orthogonal planes, and a corrective action may be taken if necessary to satisfy the predetermined condition."

Independent claim 14 is patentable at least by reciting "the combined cube elements are generated by combining neighboring elements in orthogonal planes, and a corrective action may be taken if necessary."

Independent claim 15 is patentable at least by reciting "the combined cube elements are generated by combining neighboring elements in orthogonal planes, and a corrective action may be taken if necessary."

Independent claim 16 is patentable at least by reciting "determining a combination of two or more of the cube elements, the two or more of the cube elements being combinable in any of a plurality of orthogonal planes."

NEW CLAIM 17

Independent new claim 17 is directed to a method of generating cube elements for three-dimensional data, while preserving an aspect ratio. Claim 17 is fully supported by the originally

filed specification, for example, FIG. 7 and the corresponding description. Applicants believe that claim 17 patentably distinguishes over the prior art, for example, by reciting "merging the cube data sequentially in each of three orthogonal planes including two reciprocal perpendicular directions, according to the specified conditions."

CONCLUSION

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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